

O I P E
MAR 12 2004
PATENT & TRADEMARK OFFICE

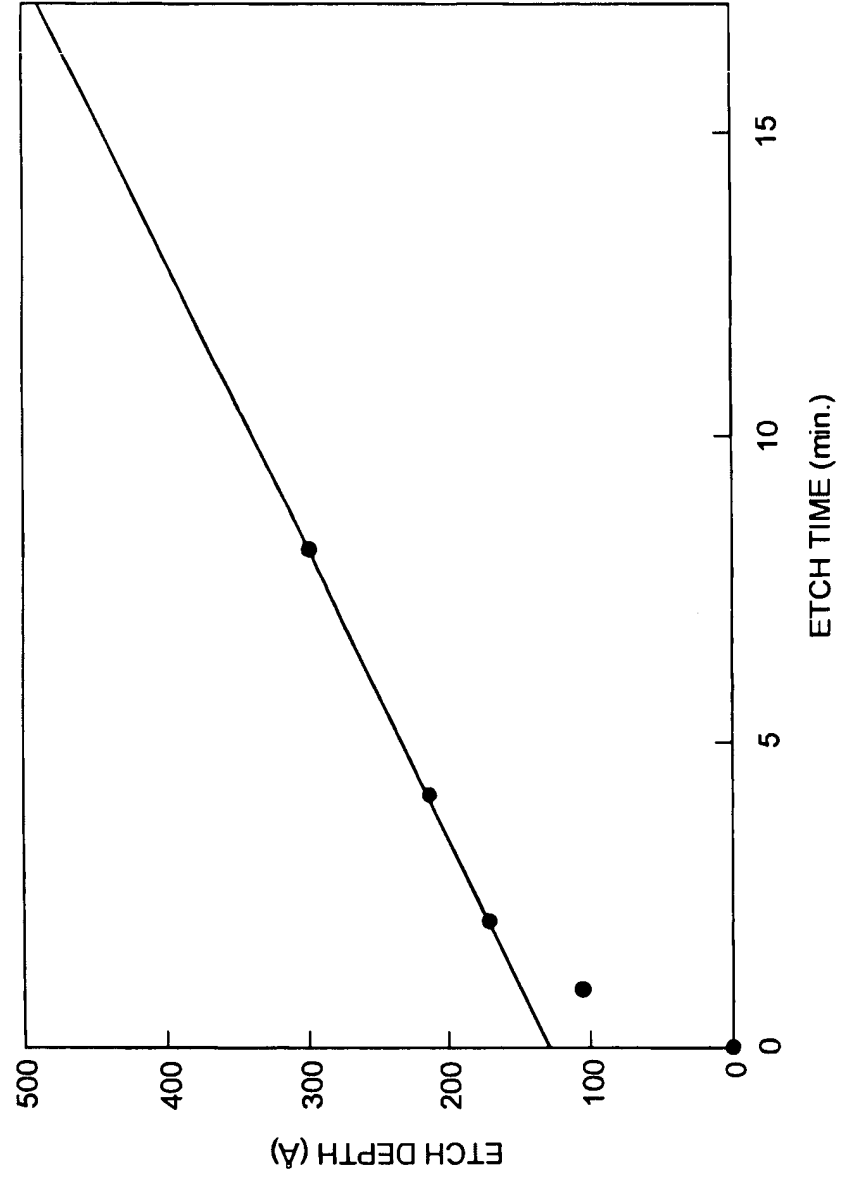


FIG. 1

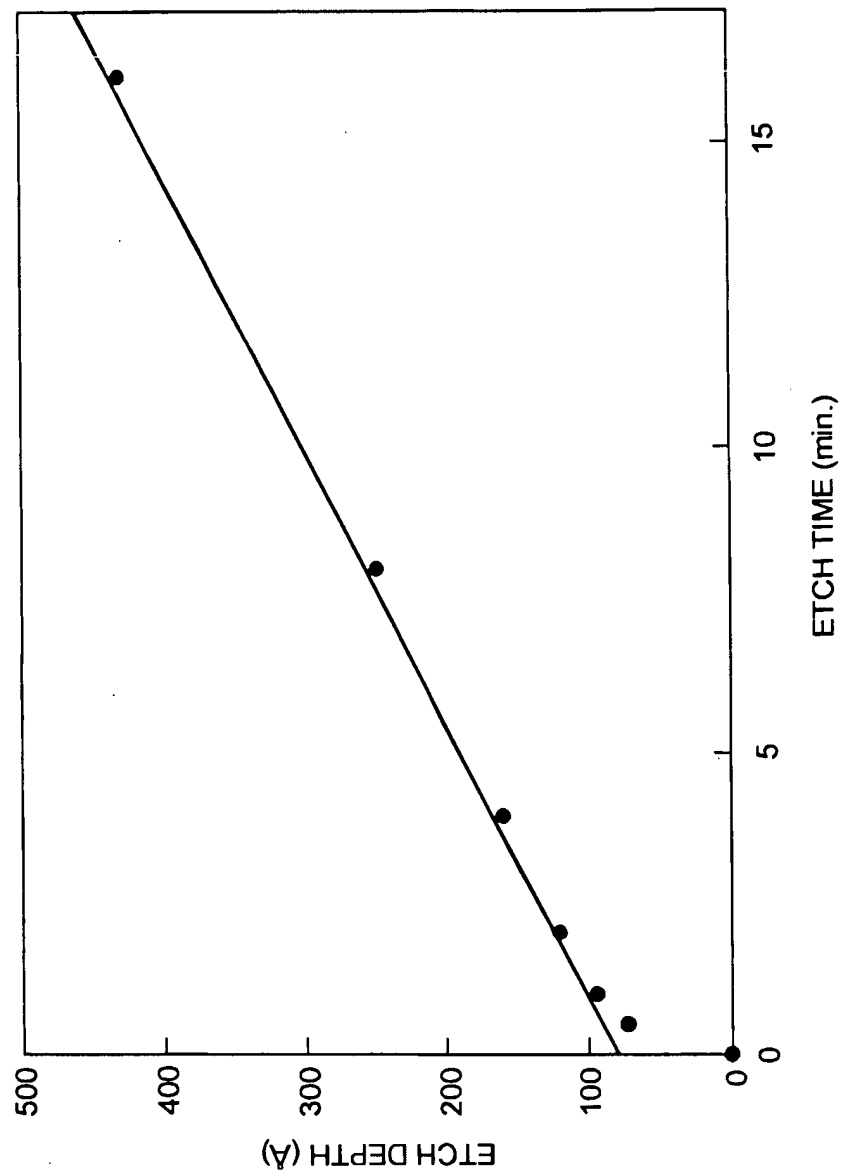


FIG. 2

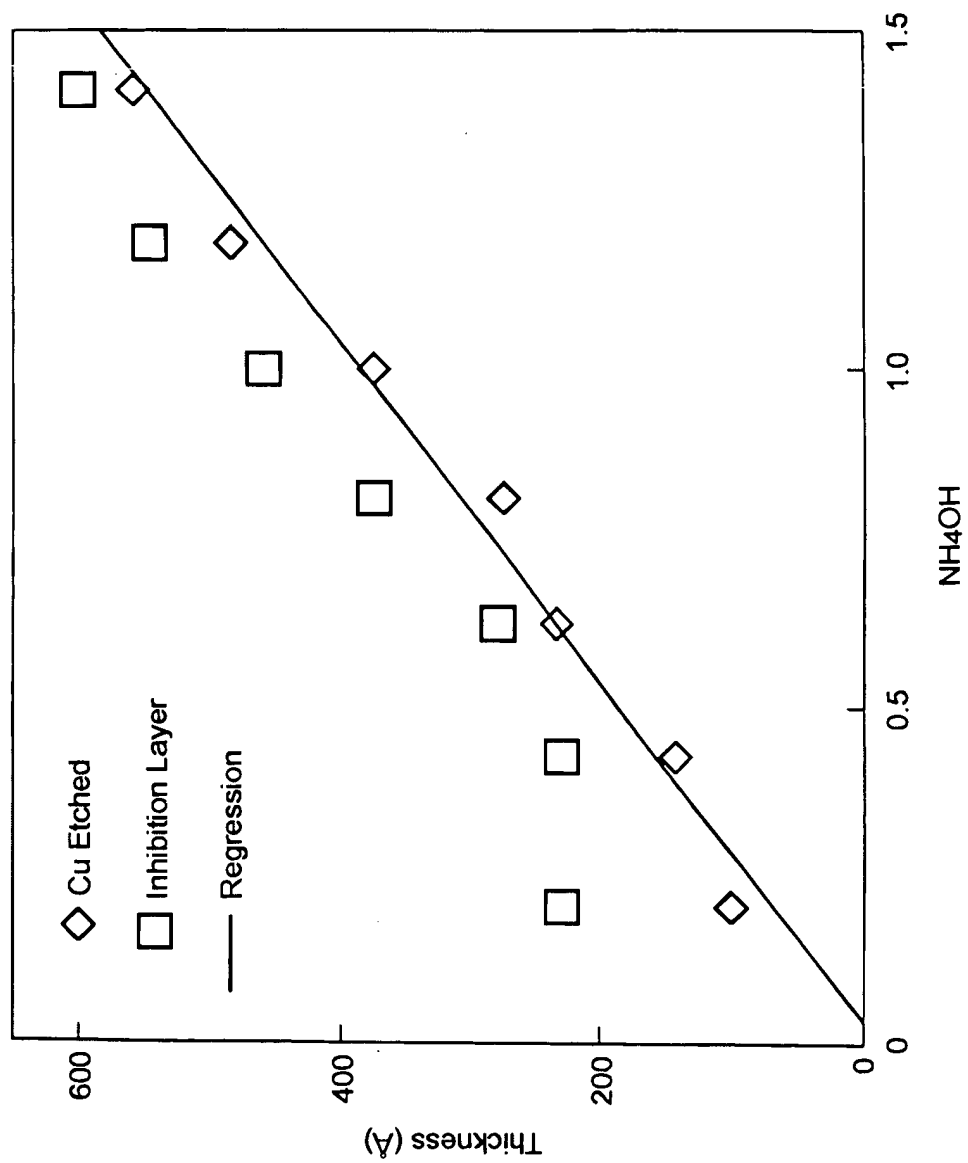
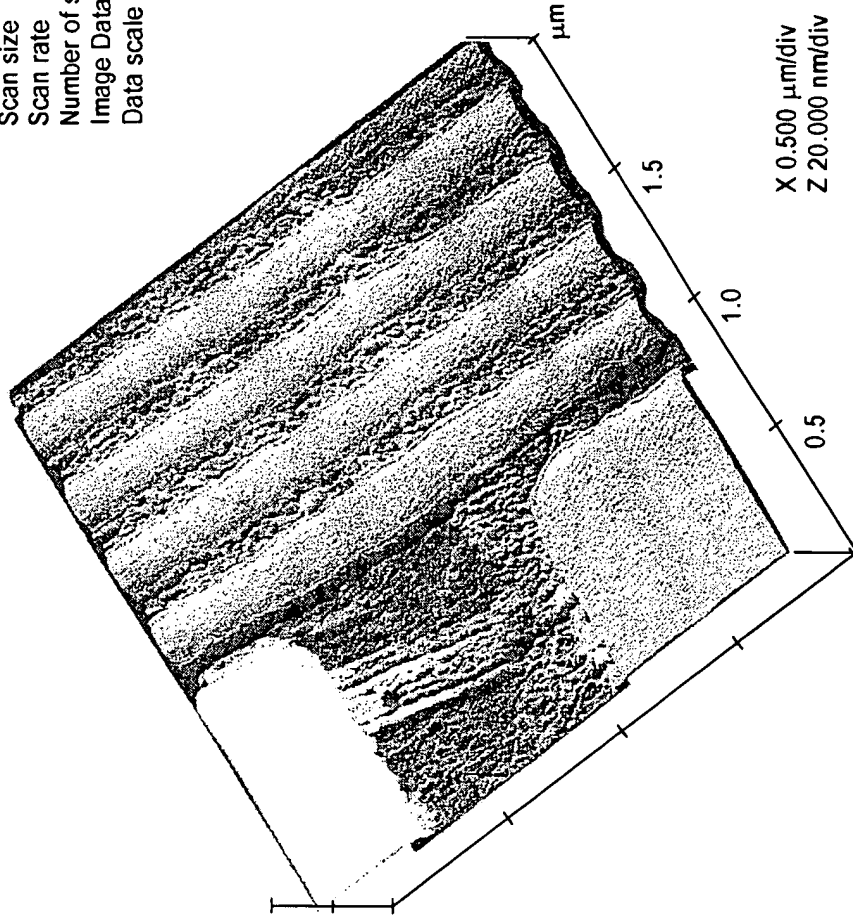


FIG. 3

Copper lines before etch start

Digital Instruments NanoScope
 Scan size 2.000 μm
 Scan rate 1.795 Hz
 Number of samples 512
 Image Data Height
 Data scale 20.00 nm



dlr0314.002

X 0.500 $\mu\text{m}/\text{div}$
 Z 20.000 nm/div

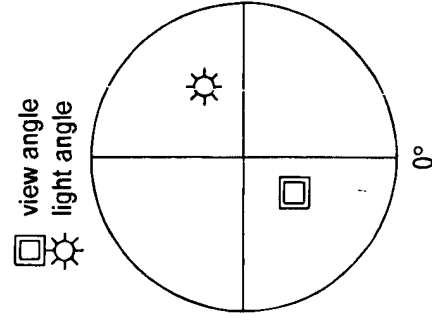


FIG. 4

"Hydrated copper oxide" (HCO) after rinse and dry

Digital Instruments NanoScope
Scan size 2.000 μm
Scan rate 1.795 Hz
Number of samples 512
Image Data Height
Data scale 50.00 nm

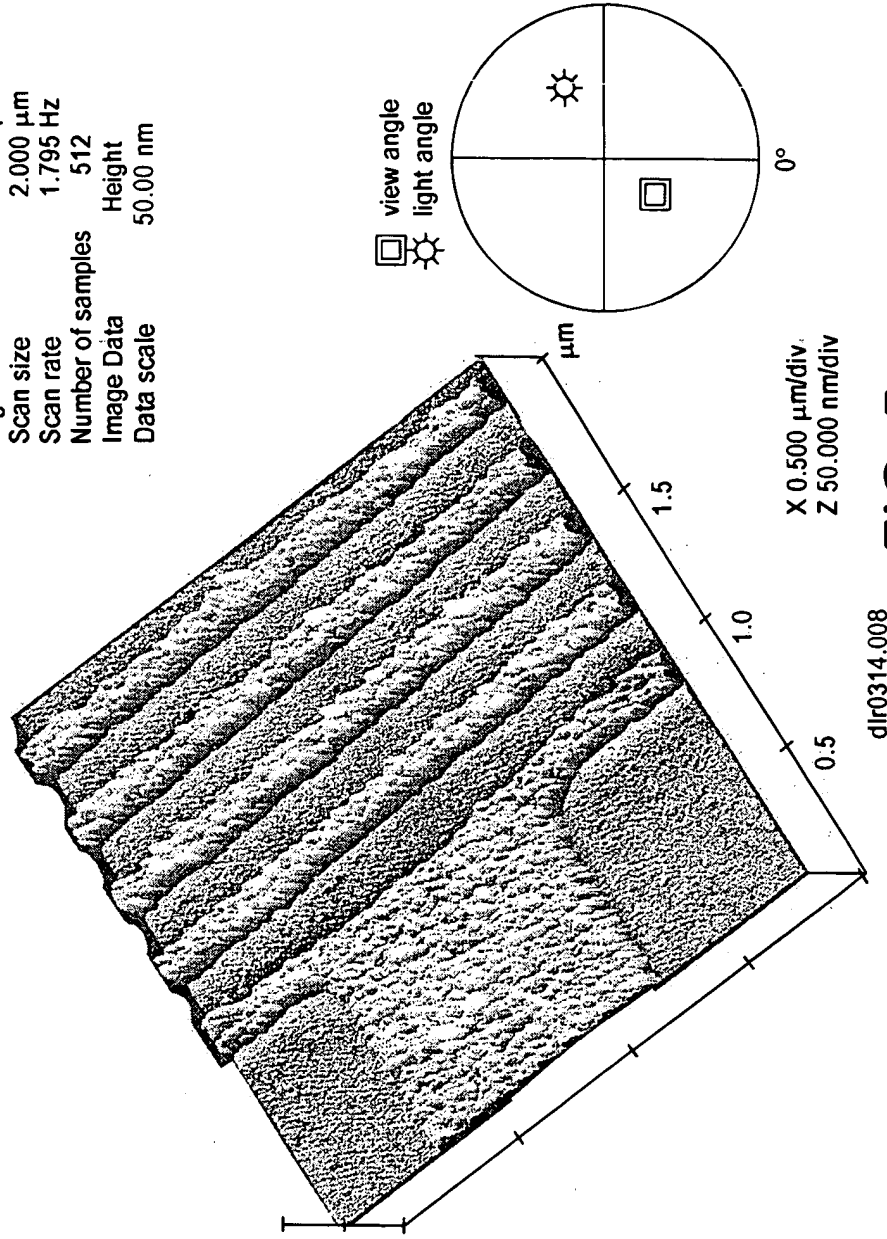


FIG. 5

(after HCO removal)

Digital Instruments NanoScope
Scan size 2.000 μm
Scan rate 1.795 Hz
Number of samples 512
Image Data Height
Data scale 100.0 nm

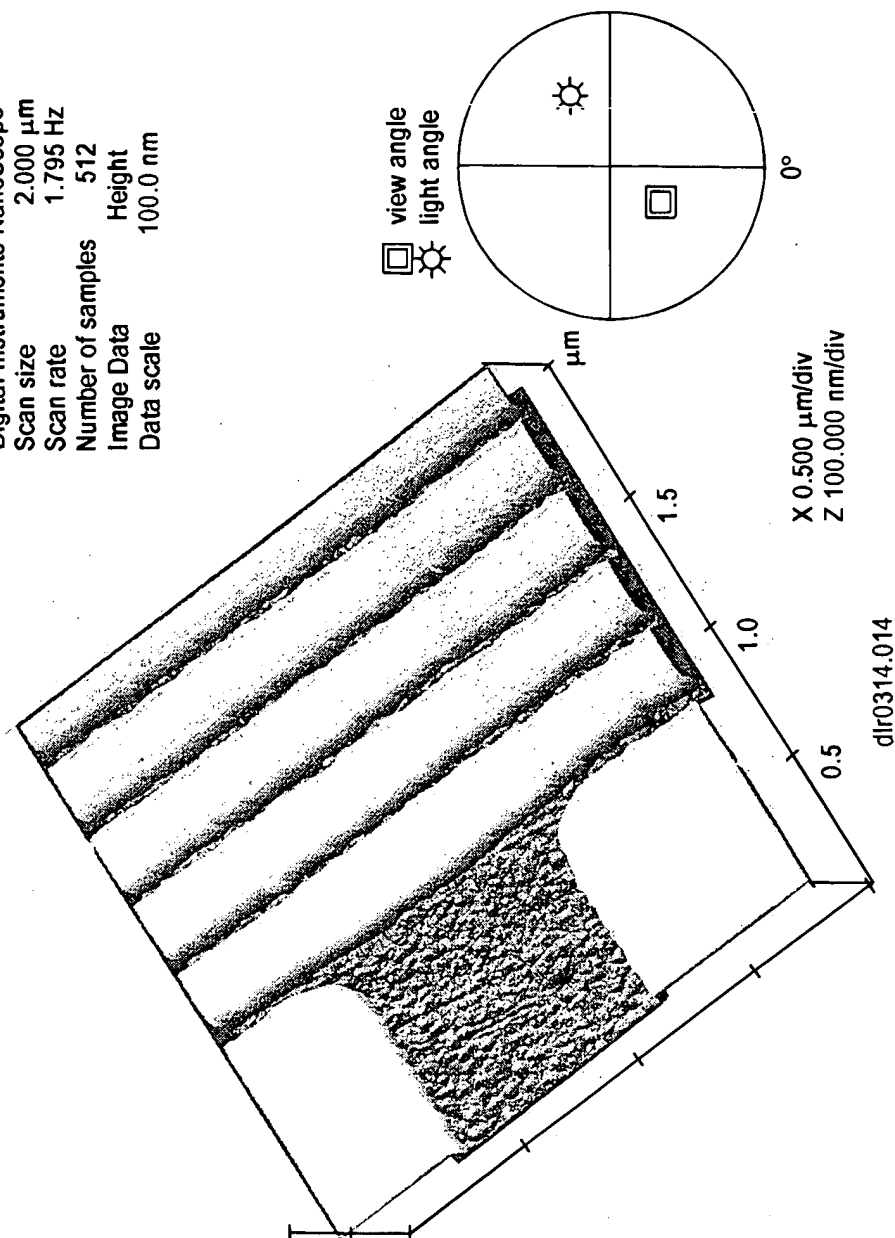
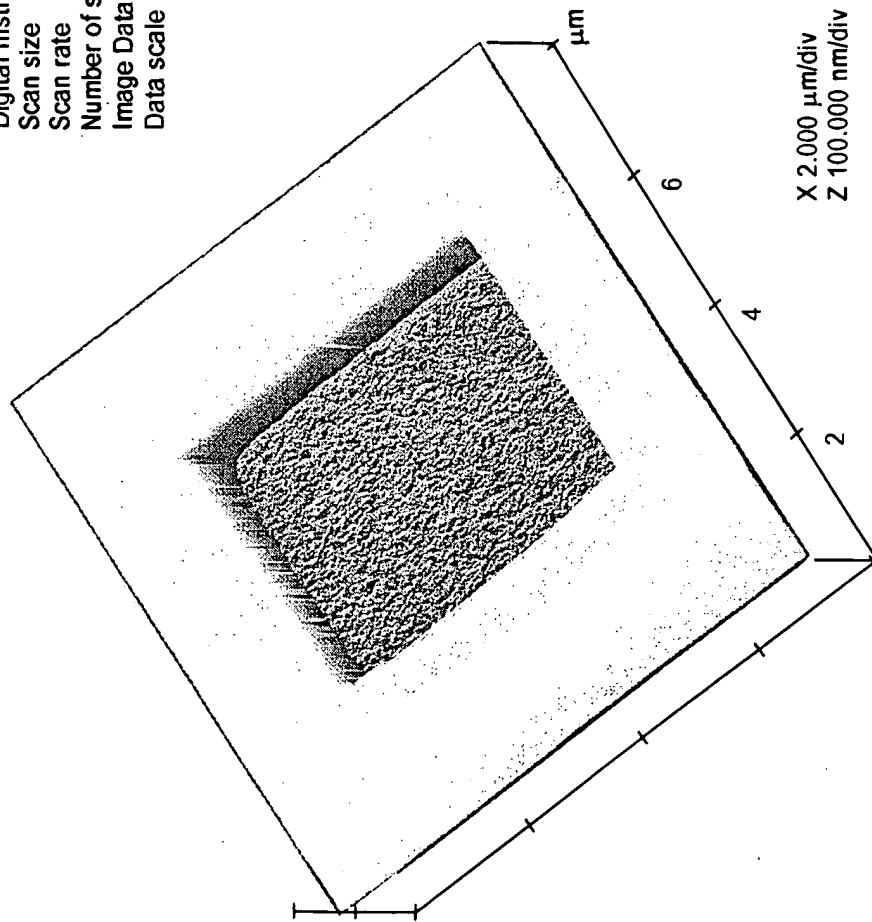


FIG. 6

Digital Instruments NanoScope
 Scan size 8.000 μm
 Scan rate 1.969 Hz
 Number of samples 512
 Image Data Height
 Data scale 100.0 nm



X 2.000 $\mu\text{m}/\text{div}$
 Z 100.000 nm/div

dlr0301.013

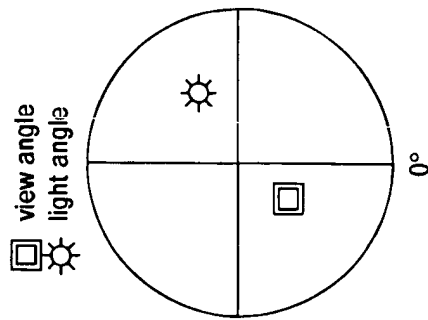


FIG. 7

Digital Instruments NanoScope
 Scan size 8.000 μm
 Scan rate 1.969 Hz
 Number of samples 512
 Image Data Height
 Data scale 100.00 nm

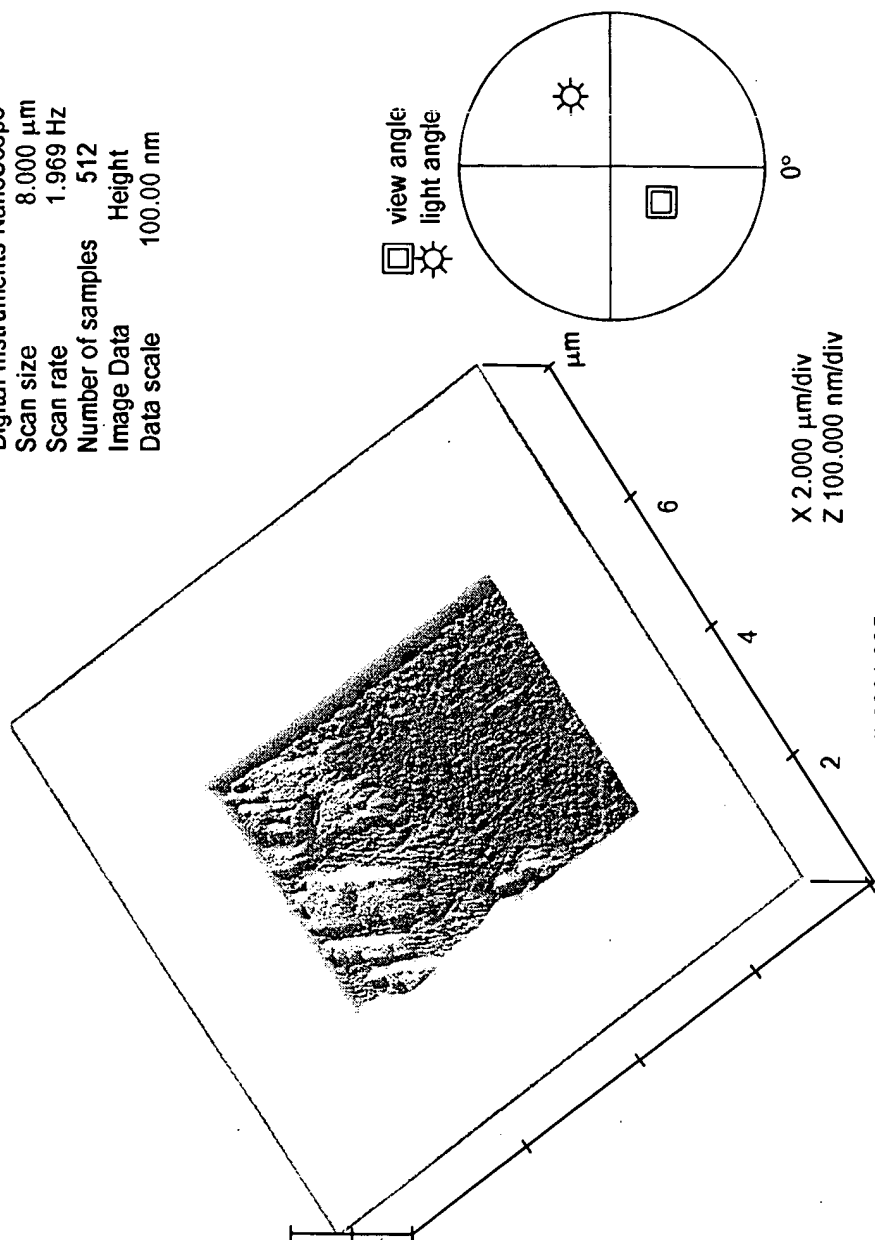


FIG. 8